

## REMARKS

### Interview

Applicant would like to thank the Examiner for his review of the application and for the phone interview of October 28, 2003.

In the last Office Action, the Examiner has rejected claims 25,26 and 34-36 under 35 U.S.C. 103 a) on the grounds that they are unpatentable over Mozzo in view of Martin and Lemelson. The other claims on the applications have been rejected on the same ground as being unpatentable over Mozzo in view of Martin and Lemelson and in view of additional references. The Examiner has also pointed out typographic errors that are found in claim 25. These typographic errors have been corrected in the present amendment.

Following this final action, the Applicant requested a phone interview with the Examiner. We want to thank the Examiner for having given the Applicant the chance to explain the difference between his application and the combination of the references that are opposed in this action. A summary of the substance of the discussion is as follows.

Applicant's agent explained what is defined by claim 25 as well as his understanding of the teachings of the Martin reference as relied upon in the final rejection. It was explained that Applicant's invention relates to a method for determining the optimal parameter values that will result in a good compromise of a plurality of product properties. The use of the property weights and the goal values of the properties in the goal function in Applicant's invention leads to the generation of the optimal parameter values. It was explained that Martin teaches weighting of property values during a state transition predicted by a dynamic model so that an error can be efficiently determined regarding the use of a dynamic model. The weights for a property are preferably as illustrated in Figure 14 of Martin, namely following a curve from zero weight to unity as time approaches the completion of the dynamic transition between two steady state values. The validated dynamic model is then used in the dynamic process control system.

Applicant's agent argued that Martin et al. is non-analogous art given that it relates to process control, a field in which feedback is used in control loops to set process parameters dynamically, and whereas Applicant's invention relates to determining an optimal set of process parameters resulting in an optimized set of product properties, a field known as experimental design. The Examiner correctly pointed out that Applicant's claims do not preclude being applied to optimization of

process control, and that such embodiments can be considered supported by Applicant's specification.

Applicant's agent requested in the telephone interview to have the Examiner indicate if a change in the claim language to direct the claimed invention to optimization of a steady-state process would overcome the instant rejection of the claims. Applicant's agent indicated that such amended claims could be submitted in an RCE. The Examiner requested that such a proposed amendment be submitted as an after-final amendment, and that the allowability of such claims would be indicated in the following advisory action.

#### **Summary of present response**

This after-final response is being filed following a Notice of Appeal filed on November 14, 2003. Applicant proposes to file the appeal brief, if necessary, following receipt of the Examiner's advisory action.

In reviewing the final rejection of the claims, Applicant has noticed that the teachings of the Martin et al. reference (US patent 6,487,459) relied upon for the rejection of all claims has been mischaracterized in establishing the prima facie case of obviousness. This error in the rejection was overlooked by Applicant once a conclusion was erroneously made that Martin was non-analogous art with respect to Applicant's invention as claimed. In view of the arguments provided hereinbelow, Applicant respectfully requests reconsideration of the rejection of the claims.

Applicant is not amending the claims in the present amendment with the exception of the subparagraph numbering in claim 25.

The Abstract is being submitted in this amendment on a separate page in response to the objection raised by the Examiner in the final action.

#### **The error in interpretation of the Martin reference used in the rejection of the claims**

The rejections of the claims in the final action reiterate the rejections made in the first office action. The characterization of the Martin reference from the rejection of claim 25 in the first office action reads as follows:

MA teaches assigning values to a set of k property weights  $w_j$  representing relative importance of the properties  $Y_j$  for the characterization of the product (Col 15, Lines 11-22), as weighting provides different importance to different properties (Col 16, Lines 26-27) and it adds robustness to handle mismatch between process and prediction model (Col 15, Lines 52-54).

This characterization is essentially repeated for the rejection of all claims.

It is respectfully submitted that it is an error to ascribe to the teachings of Martin as recited by the Examiner that the weights represent the relative importance of the properties. Relative importance of the properties as claimed in Applicant's invention means the importance of one property relative to other properties. The teachings of the Martin reference cited by the Examiner describe the technique and advantages related to weighting a single property value relative to the same single property value at different times, as calculated by a dynamic model that is to be optimized. A property remains the same even if it has different values at different times in the process to be optimally controlled.

The cited passage at Col 16, Lines 26-27, and more precisely the paragraph at Col 16, line 23 to 39, describes that "trajectory weighting is method where differing behaviors have graduated importance in time". "Behavior" in Martin refers to the dynamic model prediction values during the transition period between two steady state values (see Col 15, Lines 33 to 42). This does not teach that "weighting provides different importance to different properties" as asserted by the Examiner in the first office action. "Differing" in the cited passage means differing within the dynamic model with respect to the constraints imposed by the steady state model as the horizon approaches  $k=N$ , and thus is a single process property differing with respect to itself and not other properties. "Differing" does not refer to differing with respect to weight values for other process properties representing relative importance of the properties.

Likewise, the cited passage at Col 15, Lines 52-54, that the Examiner has relied upon as motivation to combine the teachings of Martin with the other references, teaches the desirability of providing weighting factors  $A_j$  to be time varying, as for example is illustrated in Figure 14 (see Col 15, Lines 43 to 51), and thus differ from the weighting factors for the same process property over time. This does not motivate to apply property weights representing importance of the properties relative to one another.

While Martin provides equation 23 at Col 15 with the weight factor  $A_j$  for each control variable, the teachings of Martin are totally silent as to how the weight factors for the control variable are selected, and whether they represent relative importance of the process properties. Martin does not teach that there is any advantage to a particular selection of the weight factors  $A_j$  for each control variable with respect to one another, as erroneously indicated by the Examiner.

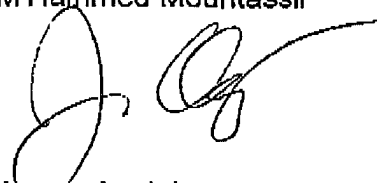
Furthermore, the goal function in equation 23 uses the values of CV<sub>j</sub> determined from the steady state model as the target value  $Y_d(t)$  and not specified goal values for the properties, as claimed in Applicant's claim 25. Thus the objective of the weights as taught by Martin is to optimize the dynamic model vis-à-vis the steady state

model and not with respect to specific goal values for the process properties. It is therefore submitted that Martin cannot motivate the use of relative property weights to optimize a set of n optimal parameter values used in a process to produce a product.

In view of the foregoing, reconsideration of the rejection of claims 25 to 52 is respectfully requested.

Respectfully submitted,  
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**CUSTOMER NO.020988**

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